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A Medical Survey of the Irish Famine of 1846

A Robert Campbell Memorial Oration

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Many years ago as a house surgeon in the Royal Victoria Hospital, it sometimes fell to my duty to call on Mr. Robert Campbell in the middle of the night to deal with some surgical emergency in the wards. And when on these occasions I would hang on every word of his oracular pronouncements—and unlike some other oracles I have encountered, I never knew Mr. Campbell to be wrong—I did not dream then that my name would ever in any way be linked with his.

He was an extraordinary man, with long continued silences, so that he would go through all the stages of a complicated operation without uttering a word; then, at too infrequent intervals, his outbursts of eloquence, when he would pour forth a store of wisdom and knowledge to the profit and delight of all fortunate enough to hear him. Sometimes he would go on at such length as to disorganize the whole work of the Extern Department, and the Sister in desperation would rattle dishes and turn on taps to warn "Robert" that it was time he went off. I remember one such day when the Sister dispatched a nurse to find out if these demonstrations had had any effect. The scout peeped cautiously round the door, but Mr. Campbell—who never missed anything—saw her and looking up with a little twinkle in his eye, he said, "Robert's still here!" And, Ladies and Gentlemen, I think that, both in spirit and in influence, "Robert" is still here to-night.

I assure you I will always treasure this Medal; first, because of its association with a man whom, when I knew him, I revered on this side idolatry; and second, because the award has been made by fellow-members of my own Medical School.

It is assumed not uncommonly that the London Plague of 1665 was an isolated event, and so it is often referred to as "The Plague of London," whereas we

know that it was merely the last of a long series of epidemics of plague which had flared up with wearying monotony for centuries past, each of these standing out in the popular memory until in turn it was replaced by another. In the same way the Irish famine of a century ago has become "The Famine," although relative to the population it was no worse than others that had gone before. These dreadful visitations were not peculiar to Ireland, but were once the common lot of Europe, and so universal and calamitous could they be that we find an English chronicler crying out that the hand of God was lifted against the people of Christendom.

The basic cause of all these famines wherever they occurred was the low standard of economic life of the people, most of whom at the best lived only one season ahead of starvation. Any extensive failure of the crops resulted in famine, local or widespread. In England, the standard of life rose steadily over the centuries; owing to the introduction of new root crops, cattle could be fed throughout the winter instead of being killed off in large numbers as before, and although in lean years there might still be scarcity with distress and fever in one part or another, the generalized famines and generalized famine fevers in England came to an end with the fourteenth century.

In Ireland, however, there was no parallel improvement. Here wars of conquest, internal strife, confiscations and penal enactments combined to depress the economic standard of the Irish peasant. The potato had proved a cheap and plentiful source of food, and any young man who could obtain a scrap of ground and build some kind of a hovel might marry and raise a family, and so over-population was added to the existing evils. As there was not enough land to go round, holdings were divided and subdivided; middlemen rented land from the owners, and instead of cultivating it themselves let it out in plots at inflated rents. In the end nearly three million of the population came to be dependent on the potato for their existence. This number was made up of three main classes: (1) Peasant farmers renting an acre or two of ground; (2) Labourers who lived in cabins on the farm where they worked, cultivating one or more roods of land for themselves; (3) Men without any fixed employment, working when they could at a wage of fourpence to tenpence a day, and hiring a scrap of land to serve as a potato garden. People existing in these deplorable conditions could not lay by reserves to carry them over bad times, and when these arrived, as sooner or later they did, the whole crazy system collapsed in chaos.

Food shortages in Ireland were commonly brought about by prolonged wet and cold; one bad season caused distress, two in succession meant famine. The famine which concerns us, however, had a different origin, a fungus disease of the potato due to *Phytophthora infestans* which appears in the form of black spots on the leaves, and on the under surface a whitish mould containing the spores. These fall to the ground and destroy the tubers, and are conveyed to other plants by wind, rain and insects. The fungus is checked by dry weather, and

flourishes in profusion when the weather is warm and damp. The blight showed itself in 1845, but was limited in its distribution so that there was severe want in some localities, and abundant food in others. The summer of 1846 was damp and of "unprecedented heat;" the blight broke out once more, this time with the greatest virulence, and swept over the country. One day the fields were covered with a luxuriant growth; a few days later the leaves and stalks were black and dead, and the food of a whole countryside had vanished. The price of potatoes rose from two shillings a hundredweight to seven shillings and later to twelve shillings when obtainable at all. The people lacked the means to buy grain in substitution. Some farmers of the more comfortable class sold out their stock of animals and fowls, fearing that these would be raided by starving mobs, a short-sighted policy that recoiled on their own heads, and swelled the rising tide of misery. By the winter of 1846-47 the food position was desperate, and widespread famine reigned.

Every famine in these islands provoked an epidemic of fever with the regularity of clockwork. The famine fever was made up of two elements in varying degrees of admixture, typhus and relapsing fever, both conveyed by the common louse of man, though this was not proved until sixty years after the Famine. Typhus was familiar to every doctor in Ireland— " the disease natural to our climate," they called it, for it was endemic in depressed and congested parts of the country and in the slums of towns, though varying greatly in extent and severity from year to year. Foci of relapsing fever must have existed also, for the disease always appeared in famine, but much less is heard of it in normal times, and some doctors did not recognize the disease when eventually it reached their districts, and reported that it "presented symptoms of a new and extraordinary nature." Relapsing fever was described as propagated more rapidly than typhus, and as running through whole families in a few days. I suggest that the more rapid spread was probably due to the fact that blood from a relapsing-fever patient can convey infection if it comes into contact with the skin or the eye. Profuse nose-bleeding was a common feature of an attack, and in addition, extensive hæmorrhages occurred from other parts due to associated scurvy. In the crowded cabins contamination with such blood could not well have been escaped.

Outbreaks of relapsing fever, under the name "intermittent fever," were recorded in Dublin in the early 1700's, and described as occurring alongside spotted fever, the name "typhus" not having then come into use. The disease was also clearly described by Rutty, the Quaker physician of Dublin, in the famine of 1740. In spite of this, as late as 1846, a small minority of doctors maintained that typhus and relapsing fever are no more than clinical variants of the same infection, pointing out that in two patients removed from the same house and even from the same bed, the attack might follow a relapsing fever course in the one, and a typhus course in the other; and that in the same individual an attack might begin with

symptoms of relapsing fever, and later assume those of typhus, or vice versa. We know to-day that the latter vagaries resulted from double infections.

A natural consequence of the spread and intensification of the famine was a steady deterioration in the sanitary conditions of the hunger-stricken. People striving to keep body and soul together by what they could find of dock leaves, nettles and the like, with perhaps an odd handful of raw meal, or going altogether foodless for days on end, would not concern themselves much about personal cleanliness, even had they strength enough to carry water from the well, or any fuel to heat it. Their clothing of any market value had been sold long since to passing pedlars; they piled on whatever rags they had left, and wore these night and day. huddling together for warmth in the colder weather. The neighbours crowded into any cabin where a fire was burning, or where there was food of sorts to be shared or bartered. In these ideal conditions lice multipled and spread, and even those who ordinarily were cleanly in their persons became infested. Thus there was prepared a rich soil ready and waiting for the seeds of fever which sooner or later were sure to fall.

A slow and gradual extension of fever was noticeable before the storm broke. At the beginning of December, 1844, the fever cases in the workhouse hospitals numbered 362; at the same date of 1846, the figure had increased fivefold. Over the same period the number of workhouses containing fever patients rose from thirty-two to seventy-one. A similar portentous increase in fever was reported from various dispensary districts.

As the famine strengthened its hold, crowds of the starving deserted their homes and took to the roads, in the hope of escaping certain death from hunger. To the voluntary migrants were added others evicted for rent default, "turned adrift to find a living where no living was to be found." Some of the wayfarers were incubating fever and developed a frank attack on their journey. Others, even a greater menace, had the disease in too mild a form to be prostrated by it—in the words of a doctor of the day, "I saw many pass through the fever while they were literally walking about." Convalescents carried infection with them in one way or another. The miserable lodging-houses frequented by the class of strolling beggars became centres of dissemination. In one such on the Sligo Mail-Coach Road, there were sixty deaths from fever in one period of three months; the original proprietor and his successor both died of typhus.

In spite of the pickets of able-bodied men posted on the roads (by authority of 59, Geo. 3, cap. 41), these migrations were the most active means by which disease was spread abroad, and one example of the after-results may be given. The district of Trim in Co. Meath was accounted amongst the wealthiest in Ireland. The inhabitants were comfortably circumstanced and engaged mainly in breeding animal stock. Hence the failure of the potato crop, moreover not complete in the locality, did not result in starvation. In spite of these special advantages, disease became very prevalent. A doctor of the place described how the fugitives flocking

in from the west carried the fever in their own persons, and mixing with the people attending markets and fairs, imparted the disease to them. "I often observed whole families belonging to distant counties lying in fever on the roadside."

Wherever the fugitives went they left a trail of disease behind them, so that the ominous term "road fever" passed once more into current use. In the conditions then prevailing, the introduction even of a single case of fever was like tossing a lighted match into a powder magazine. This is exemplified by the history of Ballinrobe workhouse, Co. Mayo. This institution, unlike so many others, had escaped fever until the end of February, 1847, when a strolling beggar was admitted, and a few days later died of typhus. The disease swept through the workhouse, crowded far beyond its capacity with men, women and children, huddled together in the same compartment, living and sleeping in their clothes, for they had neither bedding to lie on nor a blanket to cover them. Large numbers died. The physician, the chaplain, the master, the matron and the clerk of the Union, went down with typhus simultaneously, and only two of these survived.

The epidemic developed and spread in this irregular and sporadic fashion until nearly the whole country was engulfed. In Co. Kilkenny fever was rampant as early as the summer of 1845. In Cork, it broke out early in 1846 and reached its height in the following year. "During the first six months of that dark period," wrote Dr. Callanan of Cork city, "one-third of the daily population of our streets consisted of shadows and spectres, the impersonations of disease and famine, crowding in from the rural districts, and stalking along to the general doom—the grave—which appeared to await them at the distance of a few steps or a few short hours." In Dublin, the epidemic was described as beginning with the year 1847, or a few weeks earlier. Fever in Belfast began to spread in September, 1846. Tyrone was attacked in December, 1846, and Derry in the spring of 1847. In Co. Down, fever appeared generally in the early spring of 1847, but the Hillsborough district escaped fever until the middle of June, after which date " it prevailed greatly"; in this month a "great prevalence of disease" was reported in Donaghadee and Newtownards. It is interesting that in Wexford, fever broke out in two distressed areas in April, 1847, but in the rest of this county where there was little actual starvation, the disease did not appear generally for more than another year. The remote northern parts of Co. Leitrim escaped until the end of 1847, and the western islands of Inisbofin and Inishark until the middle of 1848, by which time the epidemic was virtually over in some parts of the country.

The only extensive area to escape famine fever altogether was that part of Co. Down centred on Rostrevor and Warrenpoint. Local medical opinion ascribed this peculiar immunity to the fact that want was seldom or never known there, because of the amount of employment provided by the numerous and wealthy resident gentry. Other parts of Ireland, however, equally favoured in this way suffered heavily from imported fever. The most likely explanation is that the district was not traversed by any of the direct routes to the larger towns which were the goal

of the hosts of starving migrants. It is significant in this connection that the same district also escaped the famine fever of 1816.

Dysentery of the bacillary variety has always been a concomitant of famine, whether this was brought about by natural causes or by war. The infection is predisposed to by the unhealthy state of the intestine and consequent diarrhœa brought about by weakness and unsuitable food. The disease is of long standing in Ireland. Under the name *Ruith fola*—bloody flux—it is recorded as widely epidemic in A.D. 763; a king of Connaught died of it in 767. Gerard Boate, writing during the Cromwellian wars, says that "The looseness" is so general in Ireland that the English settlers have given it the name of "The country-disease," a term used by Cromwell in his despatches from Ireland. Boate gives the warning that if those attacked by the looseness do not check it, "they do commonly after some days get the bleeding with it, . . . and at last it useth to turn to the Bloody flux."

In those parts of the country hardest hit by famine, dysentery broke out long before the fever had begun to spread. Elsewhere, dysentery might precede the fever, accompany, or follow it. Belfast escaped lightly compared with other places, and only some 1,800 cases of dysentery were admitted to the hospitals there. The type was severe, however, with a mortality of 32 per cent.

Two non-infectious disorders became prevalent during the famine, scurvy and famine dropsy. It is an eloquent testimony to the anti-scorbutic properties of the potato that although millions of peasants had lived for years exclusively on potatoes, scurvy was unknown amongst them until the famine, and so unfamiliar were many doctors with the disease, that its symptoms were often regarded as a complication or sequel of relapsing fever. One instructive point was recorded from Waterford city. Here the comfortable artisan class adopted a famine diet of bread, tea, and porridge made of Indian meal. They and their families suffered severely from scurvy, whereas the destitute of the place escaped the disease entirely. In the words of the recorder, "I can really attribute this to nothing else but the soup given them by the Quakers, which was well seasoned with vegetables."

Wherever scurvy and famine dropsy were both in evidence, the dropsy was a later development as representing a more severe grade of deprivation. The swelling showed itself first in the feet and ankles, spreading upwards until in the end the sufferer was water-logged. When the people of the parish of Schull were dying at the rate of fifty a day, the Rev. Dr. Traill* wrote that in the frightful and fearful havoc around him, the aged and the young "are almost without exception swollen and ripening for the grave." This devoted rector who laboured unsparingly for these unhappy creatures, himself died of typhus.

In this famine, just as in that of 1816, it was noticed that the incidence of fever and its mortality were greatly influenced by the social standing of the sufferers. Many of the gentry and of the upper class generally, contracted typhus, but

*In contemporary reports, this rector's name appears both as "Traill" and "Traill Hall."

relapsing fever was almost unheard of amongst them, even when this was the form of disease to which they had been most exposed. Also the proportion of fatalities from fever was much in excess of that usual amongst the peasantry, differing by as much as 16 to 1.

A third difference was that when one of a better-class family contracted typhus, the disease did not spread to other members of the household even when no form of isolation was adopted. These discrepancies were reported independently by doctors all over the country, and their occurrence cannot be gainsaid. It would be interesting to discuss the reasons for them, and I suggest the following explanations. In the louse the organisms of typhus—*Rickettsia*—invade the cells lining the intestine of the insect. The invaded cells, packed with *Rickettsia,* swell out like balloons, and eventually burst. The organisms thus set free pass out with the intestinal contents. This fæcal matter dries to a light dust, which is easily diffused and blown about and in this the contained *Rickettsia* can remain alive for long periods. Consequently, it is possible for persons to become infected by this fæcal dust—through the skin, the eye, or by inhalation—without having lice on the body. This method of infection does not occur in relapsing fever, for here the spirochætes causing the disease remain within the body of the insect, and are set free only when its delicate structure is sufficiently damaged—as in scratching—to allow its body fluid to exude on to the skin. Although the role of the louse as a vehicle of infection was unknown, the great increase of vermin among the sick and the starving was common knowledge, and the efforts made by the better class to avoid picking up these parasites would at the same time save them from louse-borne relapsing fever, but not from typhus conveyed by fæcal dust. Persons contracting typhus in this way, being themselves free from lice, could not pass on the disease to others.

The higher proportion of fatalities from fever among the better classes was partly due to their liability to contract the more deadly typhus rather than relapsing fever. This, however, is not the full explanation, for their case-mortality rate from typhus was also higher than that from typhus amongst the poor—60-70 per cent. being given as the former, and 20-25 per cent. as the latter. Here age would have a great influence. Typhus is much more deadly to the middle-aged and elderly than to the young, because of the great strain which the disease throws on the heart. Most of the victims among the better classes—clergy, doctors, magistrates and others set in authority—would fall into the group unfavourably placed as regards age, and so were handicapped from the start; whereas amongst the peasantry where the whole family was liable to attack, the milder infections usual in children and adolescents would keep the average mortality at a lower figure. In addition to this, however, it has long been observed that in localities where typhus is endemic, those native to the place on the whole suffer less severely from the disease than incomers who have not had the same close personal association with it in the past. The probability is that many of the former have

acquired some degree of immunity either from mild and unrecognized attacks in childhood, or by a process of vaccination with small and sub-infective doses of virus over a long period, such immunity being insufficient to protect against a later heavy infection, but enough to lessen the virulence of the attack.

With a view to meeting the apprehended danger of fever in Ireland, the Temporary Fever Act, 9 Vic., cap. 6, was passed by Parliament on 24th March, 1846. This empowered the Lord Lieutenant to appoint unpaid Commissioners of Health, up to five in number, to constitute a Central Board of Health; and to appoint additional medical officers for famine duties, these to be paid by the Treasury. Any two Commissioners, in writing, could require a Board of Guardians to set up, equip and staff a temporary fever hospital, and also make arrangements for a dispensary. In accordance with the Act, the Commissioners appointed were: Sir Randolph Routh (in charge of the commissariat operations in Ireland), Sir Robert Kane (originally a medical professor of chemistry, and later President, Queen's College, Cork), Edward Twistleton, Esq., (Chief Commissioner of the Poor Laws), Sir Philip Crampton (President Royal College of Surgeons), and Dominick John Corrigan, Esq., M.D. (best remembered to-day by "Corrigan's pulse").

The summer of 1846 passed without producing, in the opinion of the Board, much cause for alarm. Reports from the country—soon to be falsified—foretold luxuriant crops. Only seventeen requests for the Board's assistance had been received throughout. The Act, therefore, was allowed to expire on 31st August, 1846, a tragic error of judgement. The Board ended its sittings, and the additional medical officers were discharged. It was ruled that where it was necessary to keep on a temporary fever hospital, this could be done under the Poor Law Amendent Act, 6 and 7 Vic., cap. 92.

In a report dated 5th December, 1846, the Board gave an appreciation of the situation, based mainly on an analysis of the incidence of fever in Dublin in twelve foregoing years. The increase in 1846 they thought to be no more than one of the seasonal fluctuations which often occurred, and the then rarity of severe cases of typhus was taken as a good omen. Their summing up was that the existing scarcity of food must excite an apprehension that fever might spread extensively, but that appearances rather suggested that this development might not take place.

If the Commissioners had looked further afield than Dublin, and taken into consideration only one report which they had received, they would have had some warning of the magnitude of the catastrophe that lay ahead. This was from the clerk of Skibbereen Union, who pointed out the great increase in the number of inmates in the workhouse on 21st November, 1846, as compared with the number on the same day a year before. The workhouse had accommodation for 500 inmates. The total number in the workhouse had risen from 240 to 889; in the infirmary, from 40 to 729; in the fever hospital, equipped for 40 beds, from none to 140. That is to say, of nearly 900 inmates occupying space intended for 500, there were

only 20 who were not sick in hospital. Deaths in the month had risen from 1 to 67.

As the season advanced, reports controverted all belief that famine and disease might not spread beyond a few unhappy parishes, and in view of the alarming developments the Lord Lieutenant reappointed the Board of Health in February, 1847, and thereafter it remained in being until the end of the parliamentary session of 1850.

The hospital arrangements in Ireland were ill adapted to meet a great epidemic. In addition to the voluntary hospitals in some of the larger towns, the provisions for the sick poor were : (1) Workhouse infirmaries; (2) Workhouse fever hospitals; (3) County infirmaries; (4) District fever hospitals; (5) Dispensaries. Of these, the County infirmaries had no accommodation for fever patients, and the treatment of these in workhouse infirmaries was disapproved of by the Poor Law Commissioners as dangerous to other patients.

The Irish workhouse system was established in 1838 by the Act 1 and 2 Vic., cap. 56. The task was long and laborious. The country was first divided into 130 Unions, and these sub-divided into 2,049 electoral areas; extensive surveys and valuations had to be carried out, and a workhouse built in each of the Unions. By the end of 1844, 113 workhouses were open; a year later, 122 and most of the remaining eight opened in 1846. Each workhouse included an infirmary, with a fever hospital in a separate building, unless provision for fever patients already existed in the neighbourhood.

When the Temporary Fever Act was before Parliament in February, 1846, the Chief Secretary for Ireland declared that as regards the danger of approaching fever in Ireland, the Poor Law Commissioners had made the most ample arrangements. In fact, the hospital accommodation was totally insufficient, and was unequally distributed. The District fever hospitals were small and poorly equipped, and their funds inadequate for expansion. Large areas of the country were unprovided for. The dispensaries could not cope with thousands of fever patients in wretched cabins scattered over miles of country. The hospitals soon became packed with sick, often more than one patient to a bed, and others lying on the floor in between. Armagh fever hospital for instance, with accommodation for 100 patients, held 255. The workhouses were crowded far beyond their capacity with miserable wretches admitted by the authorities against their better judgement, for the only alternative was to leave them to starve to death outside. In such places no effective isolation was possible—hospital wards, convalescent wards, living space, schoolrooms, and even stables were overflowing with sick. Admission to a workhouse in these conditions too often meant for the destitute only the exchange of death from hunger for death from disease. Thus, in Lurgan workhouse ninety-five inmates died in one week, and of these, fifty-two had been free from any disease when they were admitted. The ravages of fever amongst the staff of hospitals, medical and lay, added to the existing horrors. During the worst period of the famine, forty-eight

medical men died in Munster (nearly all from typhus) ; in Galway, eleven; and in Cavan, seven. Of the 473 medical officers appointed by the Board of Health to special fever duty, one in every thirteen died at his post.

While the slow moving Government measures were taking effect, unofficial relief committees and private persons brought help to the sick. Religious bodies were very active in these works of mercy. The Quakers, with their customary generosity, shipped cargoes of supplies to doctors in remote parts. In one place, within a month the Roman Catholic clergy nursed 268 sick for whom there was no room in hospital. In another, the Society of St. Vincent de Paul relieved about fifty families every week, each with an average of six or seven members down with fever. The needs of these simple folk were not great, and a good bed of clean straw laid on their mud floors they thought the height of luxury.

The Temporary Fever Act proved in practice to have many defects which had not been foreseen. In particular, there was the difficulty in coercing recalcitrant Boards of Guardians, especially when the Law Courts were not in session, and the Board had no funds to make good the defection of local authorities. So in the following year another Fever Act (10 Vic., cap. 7), was passed. This made provision for a Finance Committee and under this a Relief Committee for each of the 2,000 -odd electoral areas, or for two or more in conjunction if thought advisable. The committees were provided with funds for relief of the sick. They could also enforce and pay for the cleansing of houses, persons and clothing—measures which at the time were described as having saved "innumerable" lives. They could also deal with one crying scandal, for they were authorized to arrange and pay for what the Act called "the proper and decent interment" of the dead.

Acting chiefly on reports from its medical inspectors, the Board of Health directed existing hospitals to increase their accommodation by taking over houses, stores and other buildings including even military quarters, and by erecting hospital sheds to prescribed official plans. Such a shed, for example, to hold one hundred patients cost £250. Tents were freely used too, especially at the height of the emergency, and the military hospital tents each providing fourteen beds proved particularly satisfactory. Accommodation for the temporary fever hospitals was provided in the same way. In all, the Board of Health granted requisitions for 373 of these institutions; some were large, containing upwards of 900 beds. Regular returns from the temporary fever hospitals were furnished only from July, 1847—by which time in some parts the epidemic was declining—and from this date until August, 1850, when the Fever Acts expired, the recorded admissions numbered 579,721. It must be remembered, however, that large numbers of the sick—in many districts the great majority—did not enter hospital, and their numbers, therefore, are unknown.

One of the most complete of the reports was that furnished by Dr. Seaton Reid for Belfast. He describes the epidemic as having lasted for precisely two years, September, 1846, to September, 1848, and it broke out, he says, while food in the

town was still abundant and unusually cheap, and work plentiful, conditions which lasted until the early part of 1847. Thus it was the old story once more, fever conveyed by fugitives from elsewhere. These incomers to Belfast numbered about 10,000, a figure to be added to the then 100,000 inhabitants of the Belfast Union district. At the height of the epidemic, three hospitals were in operation with, in addition, tents sufficient for 700 convalescents.

The largest number of hospital patients on any one day (17th July, 1847) was 2,118, and soon after this date the Board was informed that the three Belfast graveyards were "choaked up." The admissions for fever numbered 13,469, to which should be added several thousand more to allow for those treated in their own homes. Included in the fever total are many cases of typhoid, a disease which also became epidemic in Belfast. In Dr. Reid's own hospital over 900 cases were given this diagnosis, about one-fifth of the "fever" group admitted there. His story makes curious reading. He describes the tongue as dry and brown, and the brain as "a good deal involved;" the mortality was 10 per cent. This would suggest typhoid of an ordinarily severe grade, but it is puzzling to learn that the duration of attack averaged only fifteen to twenty days. This short duration would be in keeping with paratyphoid fever, but the other characters he mentions are strongly against this possibility. Dr. Reid shows himself to have been a stern precisian, and the diagnostic criteria that he lays down for typhus and relapsing fever are so severe and exclusive that many genuine cases of both diseases must have been shut out from their rightful place; the addition of some proportion of these shorter fevers—e.g., typhus with little or no rash, and relapsing fever without a relapse—to the group labelled "typhoid" would reduce the number of days which the attack averaged.

Dr. Reid contrasts the symptoms of typhus and relapsing fever. He stresses the sudden onset of typhus, and says that almost invariably a patient would declare himself in a state of perfect health one day, and on the next be seized with rigor, headache and pain in the back. The onset of relapsing fever is even more sudden, and the rigor very severe. There is headache, but not the dizziness and ringing in the ears, nor the suffused and injected eyes of typhus. The pulse is quicker than in typhus. The typhus rash comes out about the fifth day, being seen first on the front of the shoulder joints, and on the epigastrium; at first the spots are capable of being temporarily removed by pressure, but become less so as the disease advances. The rash generally remains out for the course of the attack, but may last only for thirty-six or forty-eight hours; none the less, it is just as characteristic as that of scarlatina or of measles. The duration of attack is commonly fourteen days from the rigor, and the crisis is accompanied either by increased secretion of urine, or by gentle perspiration; if the latter is severe "it is in general a fatal symptom." In relapsing fever from the beginning there is great irritability of the stomach and everything is vomited. Muscle pains are frequent and severe enough to simulate acute rheumatism. These violent symptoms continue usually until the fifth day when, often with a preliminary rigor, the patient falls into a profuse

sweat, saturating the bedclothes. Immediately after this crisis he declares himself to be well, is clamorous for food and for permission to leave his bed. In none of Dr. Reid's cases did the crisis appear before the third day or later than the ninth The extremes of the duration of the succeeding relapse were one day, and nine days. He is emphatic that he never saw more than one relapse in any case, contrary to the experience elsewhere; nor did he see a second attack of typhus nor a second attack of relapsing fever in the same person. He cites the case of a patient who had at intervals typhus, relapsing fever, and typhoid.

Jaundice as a complication of relapsing fever occurred frequently enough to give rise to the name "yellow fever," which is still sometimes to be heard in fireside stories of the famine time. "Yellow fever" was not a popular name only, but was employed by many medical writers including Stokes and Graves. The title which the latter used for the section on relapsing fever in his textbook is, "Yellow Fever of the British Islands."

A complication of typhus recorded from many parts was erysipelas. Dr. Reid describes how a patient during convalescence would be seized with a rigor and a return of fever, followed in a few days by redness, pain and swelling about one of his ears, thence extending over the scalp and face, through the nostrils into the throat, and then into the larynx "producing there one of the most fatal complications that can occur."

A strange state of affairs unusual in hospital administration developed in Hillsborough. The town was served by a temporary fever hospital established at Culcavy, but for some reason which does not appear, a section of the population incited by the Archdeacon of Down, the Rev. Robert Moorhead, objected to its use. They set up an opposition hospital in several houses in Ballynahinch Street, "nominating themselves Governors," and persons "labouring in Fever" were conveyed there in carts. The local Relief Committee took a stern view of these proceedings and ordered the removal of the patients, by force if necessary, to such fit and proper place as their medical officer, Dr. Croker, should point out. The Archdeacon's party then attempted to bring fever patients into the town by force, and for a time a serious riot seemed likely to break out, but the presence of two magistrates—Colonel Hawkshaw and Hill Wilson Rowan, Esq.—supported by a body of police overawed the crowd, and after denouncing the authorities, the Archdeacon advised his followers to withdraw peaceably, which they did, taking their fever patients with them.

As is well known, the great weight of the visitation fell on the counties of the west and the south-west; but in this darkest category there must be included one of Leinster and one of Ulster, respectively Queen's County and County Cavan. Donegal was hard hit too, and here it was that the first outbreak of epidemic scurvy was reported. Antrim was one of the counties in which the largest proportion of the recorded deaths was ascribed to dysentery. Those parts of Ulster where the farms were larger and a smaller number of the population wholly dependent on the potato, never sank to the same depths of misery and degradation

which were commonly experienced in Munster and Connaught. The counties of Ulster which suffered least severely were Down, Tyrone and Fermanagh, but in parts even of these, death had been very busy.

The figures of mortality given in the census of 1851 are quite unacceptable and understate the number of deaths, I believe, by more than one-half. They were compiled from two sources, information obtained from householders, and from hospital returns. As regards the former, the details were collected after the famine when whole areas were depopulated and desolate. Many of those who had suffered most and would have had most to tell, were gone, no one knew where. Tens of thousands died in their cabins without having been seen by any doctor. Others were found dead in deserted houses, in fields and in ditches, and were buried where they had perished. At the height of the famine one road inspector in Mayo reported that he had secured the burial of 140 corpses found lying by the wayside. The value of statistics supposed to cover these poor wretches who died uncared for, often far from their homes, can be imagined. Hospital records, too were subject to gross inaccuracies. Many patients were admitted in a dying state, suffering from starvation, from fever and from dysentery, often from scurvy or famine dropsy as well, and the diagnostic label chosen to cover them would depend mainly on individual fancy. Through the chaos resulting from the illness and deaths of so many members of the staffs, the books of some hospitals were unintelligible. In others there were long gaps owing to the same cause. All the same, in many hospitals the records were kept with exemplary care in spite of all difficulties and handicaps, but between this high standard of performance and failure to keep any adequate records at all, there must have been every grade of clerical defect and omission to vitiate still further the value of the official statistics. The following are the mortality figures, under the more important headings given for the famine years: Deaths from fever, 192,937; from dysentery and diarrhœa, 125,148; from starvation, 20,402—to which should be added most of the 22,384 deaths attributed to "dropsy." For 99,015 of the deaths, no cause is given. It is my belief that the total mortality attributable to the famine cannot have fallen far short of one million, equal to about one-eight of the population.

At an early stage of the war against famine and disease, the Government and its agents lost the initiative by two fundamental miscalculations. Basing their forecast on previous happenings, they assumed that after the partial destruction of the potato crop in 1845 the next year would bring, if not a rich crop, at least a sufficient one, for never before had the blight in its second year of duration swept across the country with all-consuming fury. For the second error, the Board of Health was responsible: the misreading of portents so that the diminution in fever observed in the summer of 1846 was taken as an indication that the local outbreaks had already begun to decline. It is impossible to-day to dissociate oneself from after-the-event wisdom, and assess the culpability of the members of the Board for their failure to discern the signs of the times. They could not foretell that the scheme of Relief Works, which looked admirable on paper, would miscarry

in practice—as the best laid schemes have a way of doing. Had it succeeded as was hoped and believed, there would have been no starving crowds to throng the roads and carry disease all over the country. If the Board had been wiser in its deductions, or if its members had included a prophet or a prophet's son, whatever preventive measures it might have proposed in order to meet the approaching epidemic, there was only one then available which could have had any immediate and far-reaching effect, namely, to provide additional hospitals to isolate all the sick as the cases arose, and so limit infection. In view of the obstruction offered later to the Board by local authorities when the epidemic was actually upon them, what would have been their response, and that of the Treasury, to proposals to provide hospital beds to accommodate tens of thousands of fever cases which did not then exist, and which never might exist? It was unfortunate that the Board of Health never enjoyed the confidence and full support of the medical profession. Two of its three medical members—Crampton and Kane—would never have been appointed if the advice of any representative body had been sought. Crampton chanced to be President of the College of Surgeons, but his long experience as surgeon to the Meath Hospital was no preparation for the burden he had to share. Kane had long ceased the practice of medicine, and, as Graves said, he was absolved of all blame for the shortcomings of the Board through his uniform non-attendance at its meetings. Corrigan, the third medical member, did not neglect his duties; on the contrary he was attacked for doing too much, and for being in himself the whole Board of Health. He was not popular with his fellows, who thought him vain and self-assertive; his head had been turned, it was said, by his being called on to take the Viceregal pulse. But to many of his critics any stick was good enough to belabour Corrigan and the Board. He was held responsible for the outrageous daily fee of five shillings which the Treasury paid for attendance at the fever hospitals, and for all the other instances of Government parsimony in medical affairs. His opponents fancied that by some magic which Corrigan did not possess, they in his place could have softened the stony heart of the Treasury in London : clearly they had never studied the peculiar quality that distinguishes the nether millstone. Curran, an able young professor of medicine, denounced the official fee as an insult, and refusing to accept it, continued to attend fever patients gratuitously. His lamented death from typhus, by some process of reasoning, was laid to the charge of the Board of Health. Some of the critics were biased by past controversies with Corrigan. Knowing that an outbreak of fever followed every famine with mechanical regularity, he had contended that hunger originated the fever. He was right to this extent, that it was the whole circumstances of famine that allowed the fever to blaze up and spread. One opposing party maintained that fever was engendered by overcrowding and uncleanliness. They were equally wrong and equally right, for these conditions cannot generate fever, but only enable a pre-existing focus of infection to extend its range. In blaming the relief measures for spreading disease by causing crowds of the destitute to congregate, they forgot, or did not choose to remember, that famine

fever had ravaged Ireland long before anyone dreamt of Poor Laws, Fever Acts, or Government aid. In what way nearly three million persons could receive food gratuitously from the hands of relief officials in one single day without causing the recipients to gather in crowds in the process, they did not explain. In fact, where the evils of overcrowding were at their most potent was in the homes of the poor, and in order to remedy this, millions of people must have been re-housed. It does not come within the scope of this address to discuss the possible results if the food shortage had been handled from its beginning with generosity, vigour and foresight. But once famine had the country in its grip, fever was inevitable, and no Board of Health at that date, even if given dictatorial powers and unlimited funds, could have brought the epidemic to a speedy and dramatic end. A century before the famine, Lynd had evolved the theory that typhus is carried by lice, but abandoned it through misinterpreting some of his observations on the spread of the disease, and medical opinion returned to the belief that typhus is transmitted by noxious emanations given off from the body of the sufferer. It was known that typhus even in its most malignant form would not spread if the subjects were thoroughly cleansed, and given fresh clothing which was kept clean. But of all the methods of disinfection used at the famine period with the object of counteracting the supposed bodily emanations retained in contaminated clothing and bedding, and rendering them infective, only two would have served to eradicate the lice which infested these, namely, stoving in heated ovens, and boiling. Neither of them would have been chosen for use as a general measure, because of the impossibility of setting up an organization and providing equipment on a scale sufficient to meet the needs of millions of people; and the substitutes adopted—so far as the destruction of lice in clothing and bedding was concerned—were no more than a mere beating of the air. To-day, only by wholesale treatment of a population with the new insecticides, and this compulsorily enforced by some authority with the power of military law, could epidemic typhus and relapsing fever of a like degree be stamped out effectively and with dispatch.

CHIEF SOURCES.

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